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(54) **PARAMETRIC CHASSIS SYSTEM FOR VEHICLES, COMPRISING FOUR SUSPENSION ELEMENTS, INCORPORATING A LATERAL TORSION BAR AND CO-AXIAL DAMPER UNIT, IN A BOX-MODULE, THAT ALLOWS CENTRAL LOCATION OF HEAVY ITEMS, SUCH AS BATTERIES**

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(58) **Field of Classification Search** 280/124.128, 280/124.13, 124.137, 124.149, 124.166
See application file for complete search history.

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(57) **ABSTRACT**

A chassis system and a suspension module for vehicles having wheel subsystems incorporates a lateral torsion bar and a co-axial enveloping damper unit, featuring active-adaptive suspension characteristics. Pre-fabricated suspension modules are situated inside respective box-structures, connected via wheelbase and track members, allowing the storage of heavy elements (e.g., batteries or fuel-cells) at the chassis. The robust and self-carrying chassis is enhanced, using upper body members, in terms of structural rigidity, for a given wheelbase, achieving high impact-energy absorbtion. The suspension arms incorporate upper and lower members, articulation, connect internally or externally to the suspension module, and transmit drive and brake forces to the wheels. The suspension module, box-structure, torsion-bar/damper unit, drive and transmission unit, suspension arm and steer module, featuring asymmetrical steer characteristics, can be reproduced on each corner of the chassis, featuring electronic control without mechanical connection (steer by wire), constituting the chassis of the vehicle.

20 Claims, 17 Drawing Sheets